

IN THE CLAIMS

1. (Currently amended) An apparatus for selective pressure build-up in a tubular, comprising:

a seat assembly comprising a seat supported by a movable body, said seat adapted to receive a member delivered through the tubular to land thereon to obstruct the tubular for pressure build-up;

said seat assembly movable between a first position, where the tubular may be obstructed by said member, and a second position, where flow past said seat and member can occur; and

a hydraulic movement-regulating device operable on said seat assembly to selectively regulate the rate of movement from said first to said second position.

2. (Original) The apparatus of claim 1, wherein:

said regulating device prevents movement of said seat assembly until a predetermined range of applied pressure is exerted on said seat assembly.

3. (Previously amended) An apparatus for selective pressure build-up in a tubular, comprising:

a seat assembly comprising a seat supported by a movable body, said seat adapted to receive a member thereon to obstruct the tubular for pressure build-up;

said seat assembly movable between a first position, where the tubular may be obstructed by said member, and a second position, where flow past said seat and member can occur; and

a movement-regulating device operable on said seat assembly to selectively regulate the rate of movement from said first to said second position;

said regulating device prevents movement of said seat assembly until a predetermined range of applied pressure is exerted on said seat assembly;

a housing defining a fluid chamber adjacent said seat assembly;

said seat assembly movably mounted to said housing such that movement of said seat assembly changes the volume of said fluid chamber.

4. (Original) The apparatus of claim 1, wherein:

at least one portion of said seat assembly is nonmetallic.

5. (Original) The apparatus of claim 4, wherein:

the entire seat assembly is nonmetallic.

6. (Previously amended) An apparatus for selective pressure build-up in a tubular, comprising:

a seat assembly comprising a seat supported by a movable body, said seat adapted to receive a member thereon to obstruct the tubular for pressure build-up;

said seat assembly movable between a first position, where the tubular may be obstructed by said member, and a second position, where flow past said seat and member can occur; and

a hydraulic movement-regulating device operable on said seat assembly to selectively regulate movement from said first to said second position;

said regulating device prevents movement of said seat assembly until a predetermined range of applied pressure is exerted on said seat assembly;

said seat assembly is made of at least a first and second component;

said first component releasably engaged to said second component;

said first component interacting with said regulating device for control of movement of said seat assembly;

whereupon failure of said first component to move sufficiently toward said second position, a build-up of pressure on said seat, above said predetermined range, separates said first and second components to reestablish flow in the tubular.

7. (Previously amended) An apparatus for selective pressure build-up in a tubular, comprising:

a seat assembly comprising a seat supported by a movable body, said seat adapted to receive a member thereon to obstruct the tubular for pressure build-up;

said seat assembly movable between a first position, where the tubular may be obstructed by said member, and a second position, where flow past said seat and member can occur; and

a movement-regulating device operable on said seat assembly to selectively regulate movement from said first to said second position;

said regulating device prevents movement of said seat assembly until a predetermined range of applied pressure is exerted on said seat assembly;

a housing defining a fluid chamber adjacent said seat assembly;

said seat assembly movably mounted to said housing such that movement of said seat assembly changes the volume of said fluid chamber

said fluid chamber has an outlet with a removable barrier mounted in said outlet.

8. (Original) The apparatus of claim 7, wherein:
 said removable barrier comprises a rupture disc.

9. (Original) The apparatus of claim 7, wherein:
 said outlet comprises a flow restrictor to regulate fluid flow rate out of said fluid chamber to facilitate regulated movement of said seat assembly toward its said second position.

10. (Original) The apparatus of claim 9, wherein:
 said housing comprises at least one lateral port and inlet;
 said seat assembly mounted in said inlet and in its said first position blocking said port;
 whereupon pressure build-up to said predetermined range, said seat assembly creates fluid pressure in said fluid chamber to remove said removable barrier so that said seat assembly can move toward its said second position;
 whereupon said port is opened to reestablish flow in the tubular.

11. (Original) The apparatus of claim 10, wherein:
 said port has a shape which creates an open area which increases disproportionately with increasing translational movement of said seat assembly.

12. (Original) The apparatus of claim 9, wherein:
 said seat assembly is made of at least a first and second component;
 said first component releasably engaged to said second component;
 said first component forming a part of said fluid chamber;
 whereupon failure of said first component to move sufficiently toward said second position to uncover said port, a build-up of pressure on said obstructed seat, above said predetermined range, separates said first and second components to reestablish flow in the tubular.

13. (Original) The apparatus of claim 12, wherein:
 said seat is mounted on a sleeve which defines said second component;
 said first component comprises a piston with respect to said cavity, having a bore therethrough to allow a member to pass therethrough and sealingly land on said seat;
 said piston connected to said sleeve by a breakable member for tandem movement until an applied pressure beyond said predetermined range is applied to said sleeve;

whereupon failure of said piston to move toward said second position, said sleeve separates from said piston as said breakable member breaks.

14. (Original) The apparatus of claim 13, wherein:

 said breakable member comprises at least one shear pin.

15. (Original) An apparatus for selective pressure build-up in a tubular, comprising:
 a housing;

 a seat assembly mounted to said housing and defining a fluid chamber, said fluid chamber having an outlet and an obstructing member in said outlet;

 said seat assembly further comprising a seat which, when obstructed and subjected to a predetermined range of pressure within the tubular, causes said seat assembly to, in turn, increase fluid pressure in said chamber to overcome said obstructing member, which allows movement of said seat assembly at a controlled rate from a first position, where the tubular is obstructed, to a second position, where flow past said seat assembly is established.

16. (Original) The apparatus of claim 15, wherein:

 said obstructing member further comprises a flow restriction member in said outlet.

17. (Original) An apparatus for selective pressure build-up in a tubular, comprising:
 a housing;

 a seat assembly mounted to said housing and defining a fluid chamber, said fluid chamber having an outlet and an obstructing member in said outlet;

 said seat assembly further comprising a seat which, when obstructed and subjected to a predetermined range of pressure within the tubular, causes said seat assembly to, in turn, increase fluid pressure in said chamber to overcome said obstructing member, which allows movement of said seat assembly from a first position, where the tubular is obstructed, to a second position, where flow past said seat assembly is established;

 said obstructing member comprises a rupture disc.

18. (Previously amended) An apparatus for selective pressure build-up in a tubular, comprising:

 a housing;

 a seat assembly mounted to said housing and defining a fluid chamber, said fluid chamber having an outlet and an obstructing member in said outlet;

said seat assembly further comprising a seat which, when obstructed and subjected to a predetermined range of pressure within the tubular, causes said seat assembly to, in turn, increase fluid pressure in said chamber to overcome said obstructing member, which allows movement of said seat assembly from a first position, where the tubular is obstructed, to a second position, where flow past said seat assembly is established;

said seat assembly comprises a piston having a bore therethrough and a sleeve releasably secured to said piston;

said piston forming a portion of said chamber, said bore allowing an obstructing member to pass through said piston and sealingly engage said seat;

whereupon when said piston fails to move sufficiently toward its said second position, application of pressure beyond said predetermined range of pressure causes said sleeve with said seat obstructed to break away from said piston to allow flow through the tubular.

19. (Original) An apparatus for selective pressure build-up in a tubular, comprising: a housing;

a seat assembly mounted to said housing and defining a fluid chamber, said fluid chamber having an outlet and an obstructing member in said outlet;

said seat assembly further comprising a seat which, when obstructed and subjected to a predetermined range of pressure within the tubular, causes said seat assembly to, in turn, increase fluid pressure in said chamber to overcome said obstructing member, which allows movement of said seat assembly from a first position, where the tubular is obstructed, to a second position, where flow past said seat assembly is established;

said obstructing member further comprises a flow restriction member in said outlet;

said obstructing member comprises a rupture disc;

said seat assembly comprises a piston having a bore therethrough and a sleeve releasably secured to said piston;

said piston forming a portion of said chamber, said bore allowing an obstructing member to pass through said piston and sealingly engage said seat;

whereupon if said piston fails to move sufficiently toward its said second position, application of pressure beyond said predetermined range of pressure causes said sleeve with said seat obstructed to break away from said piston to allow flow through the tubular.

20. (Currently amended) An apparatus for selective pressure build-up in a tubular, comprising:

a seat assembly comprising a seat supported by a movable body, said seat adapted to receive a member delivered through the tubular to land thereon to obstruct the tubular for pressure build-up;

said seat assembly movable between a first position, where the tubular may be obstructed by said member, and a second position, where flow past said seat and member can occur; and

a hydraulic movement-regulating device operable on said seat assembly to selectively regulate movement from said first to said second position;

the entire seat assembly is nonmetallic;

a substantial portion of said movement-regulating device is non-metallic.

21. (Previously amended) An apparatus for selective obstruction on a tubular by holding an object placed thereon, to allow pressure buildup in said tubular, comprising:

a non-metallic body mounted in the tubular having a through passage there-through and a bypass passage and further comprising a seat within said body surrounding said through passage to accept the object, to allow, in a first position, for selective pressure buildup starting from above where the object contacts said seat in said body with said bypass passage closed and, in a second position, selective release of said built up pressure through said bypass passage with said object still on said seat with said body retained in the tubular, said non-metallic construction of said body facilitating rapid removal thereof for subsequent full bore access through the tubular.

22. (Previously amended) An apparatus for selective obstruction on a tubular by holding an object placed thereon, to allow pressure buildup in said tubular, comprising:

a non-metallic body mounted in the tubular having a through passage there-through and further comprising a seat surrounding said though passage to accept the object, to allow for selective pressure buildup above said body, said non-metallic construction of said body facilitating rapid removal thereof for subsequent full bore access through the tubular;

said body is made from a plurality of non- metallic components movable with respect to each other responsive to a predetermined force on the object when engaged to the said seat to open a bypass passage around said object on said seat in said through passage.

23. (Previously added) The apparatus of claim 22, wherein:

relative movement of said non-metallic components is regulated by displacement of fluid from a cavity, defined at least in part by said components, through an outlet which presents a flow restriction.

24. (Previously added) The apparatus of claim 23, wherein:

said cavity is formed, at least in part, by the tubular.

25. (Previously amended) An apparatus for selective obstruction on a tubular by holding an object placed thereon, to allow pressure buildup in said tubular, comprising:

a non-metallic body mounted in the tubular having a passage there-through and further comprising a seat surrounding said passage to accept the object, to allow for selective pressure buildup above said body, said non-metallic construction of said body facilitating rapid removal thereof for subsequent full bore access through the tubular;

said body is made from a plurality of non-metallic components movable with respect to each other responsive to a predetermined force on the object when engaged to the said seat;

relative movement of said non-metallic components is regulated by displacement of fluid from a cavity, defined at least in part by said components, through an outlet which presents a flow restriction;

one of said components comprises a housing secured to the tubular, another of said components comprises a piston, said cavity defined between said piston and said housing, said restriction is defined by said housing as an outlet in communication with said cavity, said cavity varies in volume upon piston movement.

26. (Previously added) The apparatus of claim 25, wherein:

said piston exposes a bypass passage upon a predetermined movement.

27. (Previously added) The apparatus of claim 26, wherein:

said bypass passage increases in open area at a higher rate as said piston is displaced.

28. (Previously added) The apparatus of claim 25, wherein:

said piston is in two pieces which are selectively held by a breakable member;

whereupon pressure buildup to a predetermined level, a portion of said piston with said seat and the object in contact therewith can be expelled through said housing.

29. (Previously amended) An apparatus for selective obstruction on a tubular by holding an object placed thereon, to allow pressure buildup in said tubular, comprising:

a non-metallic body mounted in the tubular having a passage there-through and further comprising a seat surrounding said passage to accept the object, to allow for selective pressure buildup above said body, said non-metallic construction of said body facilitating rapid removal thereof for subsequent full bore access through the tubular;

said body is made from a plurality of non-metallic components movable with respect to each other responsive to a predetermined force on the object when engaged to the said seat;

relative movement of said non-metallic components is regulated by displacement of fluid from a cavity, defined at least in part by said components, through an outlet which presents a flow restriction;

said cavity is formed, at least in part, by the tubular;

said components comprise a stationary component supported by the tubular and a movable piston extending sealingly and movably through an opening in said stationary component,

said movable piston contacting the tubular to define said cavity as an annular shape around said piston; and

said restriction is mounted to said housing.

30. (Previously added) The apparatus of claim 29, wherein

said seat is secured to said piston by a breakable member;

whereupon pressure buildup to a first level on said seat, with the object engaged to it, displaces said piston with said seat to reduce the volume of said cavity by fluid displacement through said restriction, while a further pressure buildup breaks said breakable member to allow said seat and the object to be expelled from a passage in said piston.

31. (Previously amended) An apparatus for selective obstruction on a tubular by holding an object placed thereon, to allow pressure buildup in said tubular, comprising:

a non-metallic body mounted in the tubular having a passage there-through and further comprising a seat surrounding said passage to accept the object, to allow for selective pressure buildup above said body, said non-metallic construction of said body facilitating rapid removal thereof for subsequent full bore access through the tubular;

said body is made from a plurality of non-metallic components movable with respect to each other responsive to a predetermined force on the object when engaged to the said seat;

relative movement of said non-metallic components is regulated by displacement of fluid from a cavity, defined at least in part by said components, through an outlet which presents a flow restriction;

said restriction comprises a rupture disc.

32. (Previously added) The apparatus of claim 23, wherein:

said restriction comprises an orifice.

33. (Previously added) The apparatus of claim 31, wherein:

said restriction comprises an orifice.

34. (Previously added) The apparatus of claim 21, wherein:

said body comprises an external thread for mounting to the tubular.

35. (Previously amended) An apparatus for selective obstruction on a tubular by holding an object placed thereon, to allow pressure buildup in said tubular, comprising:

a non-metallic body mounted in the tubular having a through passage there-through and a bypass passage and further comprising a seat surrounding said through passage to accept the object, to allow, in a first position, for selective pressure buildup above said body with said bypass passage closed and, in a second position, selective release of said built up pressure through said bypass passage with said object still on said seat with said body retained in the tubular, said non-metallic construction of said body facilitating rapid removal thereof for subsequent full bore access through the tubular;

said seat is made from a ceramic material.

36. (Previously added) The apparatus of claim 21, wherein:

said body is made from one or more of plastic, epoxy, or phenolic materials.